Dr. Vikram Kumar

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🎓 https://scholar.google.com.au/citations?user=rMoTo0sAAAAJ&hl=en&oi=ao

Summary

- 4 years' research experience at Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia.
- 10 years' teaching experience in engineering education (CSE/IT) at Indian Institute of Information Technology, Una and Himachal Pradesh University, Shimla, India.
- Ph.D. focused on wireless sensor network (WSN) and IoT from The University of Queensland, Australia.
- Achievements include national and international scholarships and a best paper award.
- Several quality publications in international conferences and journals.
- Presently working as Faculty (CSE/IT) in Indian Institute of Information Technology Una, HP, India.

Academic Qualification

2014 – 2018	**Ph.D., The University of Queensland, Australia** in IoT and WSN. Thesis title: *Cooperative Localization and Tracking of Resource-Constrained Mobile Nodes. [Online]. Available: https://doi.org/10.14264/uql.2018.765.*
2006 – 2008	**M.Tech. (Computer Science Engineering), Himachal Pradesh University (HPU), India** in Information and Communication Technology(ICT) Planning and Management. Thesis title: *Critical Analysis of Issues in Raising H.P.U. Campus Wide Optical Fiber Network.* *Grade : First class with 70% marks.*
2002 – 2006	**B.Tech. (Information Technology), University Institute of Information Technology (UIIT), HPU, India.** *Grade : First class with 70% marks.*
2000 – 2002	**Higher Secondary (Non-medical), GSS School, Bilaspur, Himachal Pradesh (HP), India.** *Grade : First class with 67% marks.*
1999 – 2000	**Matriculation, S.V.M. School, Bilaspur, HP, India.** *Grade : First class with 80% marks, state merit list holder.*

Certificate Courses (Data Science)

2019 – 2020	**Convolutional Neural Networks in TensorFlow** *by DeepLearning.AI, California-United States through Coursera* Grade Achieved: 99.38%
	TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning *by DeepLearning.AI, California,United States through Coursera* Grade Achieved: 98.66%
	Cloud Computing Specialization *by University of Illinois at Urbana-Champaign,United States through Coursera* Grade Achieved: Pursuing

Achievements - Scholarships - Awards

May 2019 - till date	▌ **Associate Dean (Academics)** position at IIIT Una, An Institute of National Importance under Ministry of Education, Govt. of India.
May 2018 - July 2018	▌ **Write-Up Scholarship** from CSIRO, Australia.
September.......... 2016	▌ **Best Paper Award** in IEEE International Conference on Wireless Sensor Networks, Malaysia.
July 2014 - April 2018	▌ **Research Scholarship** from The University of Queensland and CSIRO, Australia.
April 2000 - April 2002	▌ **Post-matric scholarship (state merit list holder)** from Govt. of Himachal Pradesh, India.

Employment History

March 2019 – till date	▌ **Guest Faculty (CSE),** at Indian Institute of Information Technology -Una, India. **Other Roles - 2019 onwards:** (i) Associate Dean (Academic) (ii) Center In charge - IIITUna (CSAB/JoSAA) (iii) Nodal Officer-IIITUna (Study in India Program , Govt. of India) (iv) Member/Convener/Coordinator of various Technical, Research, Academic, and ICT development committees of the Institute.
July 2014 – July 2018	▌ **Postgraduate Studentship,** at CSIRO, Brisbane, Australia. *Role and Contributions: Designing algorithms for localization and tracking of mobile agents fitted with resource-constrained devices, such as IoT devices which have* **limited battery/energy and computational power.** *The target applications of these algorithms range from* **tracking and localization of industrial assets, workforce, wildlife to agriculture and environment monitoring. Localization and Tracking technologies played a vital role in Contact Tracing of COVID-19 patients.** *My Ph.D. thesis is based on this project itself.*
Aug, 2006 – June, 2014	▌ **Assistant Professor** IT/CSE at UIIT, HPU, India. *Role and Contributions: This appointment was under guest faculty rules with full teaching load as per the University Grant Commission (UGC) norms. In addition to the teaching assignments, I actively contributed to Information and Communication Technology(ICT) planning and development, AICTE/UGC report preparation and curriculum designing/updating in the institution.* *Additional Role: I also played the role of Network Engineer in HPU. In this role, I was responsible for designing, implementation, and maintenance of campus wide optical network project of HPU. I was also a member of the team handling the NMEICT and H.P. state government sponsored projects for developing ICT infrastructure (e.g. Wi-Fi, video conferencing) in HPU.*

Ongoing Research Projects

- **Energy-neutral Sensing of Mobile Agents through IoT devices**
  My Role: Co-Principal Investigator
  Funding Status: Submitted for Funding to Ministry of Science and Technology, Govt. of India.
  Description:
  The project aims to develop Energy-Neutral sensing system capable of deciding sensing schedules based on the available power, expected power harvesting, possibility of cooperation from neighboring devices, and activity level. Such systems are useful and the need of the hour for challenging applications such as Wild-life monitoring, workforce monitoring in large outdoor region, Agriculture field monitoring, and mobile assets of an organization.

Teaching & Research Interests

- **Teaching:** Computer Networks, Distributed Systems, Wireless Sensor Networks,
- **Research:** Outdoor & Indoor localization in Wireless Sensor Network, Energy-Efficient Algorithms for IoT.
- **Tools and Technologies:** TensorFlow, Python, Network Simulator-3, Uipath.

Faculty Development Programs (FDPs) and Workshops Participation

- One day grant Writing under Mathematics and Data Science organized by Indian Institute of Sciences, Bangalore, India on 12, Dec.'2021
- One day Workshop on Psycho social Support for Covid Pandemic Conditions on 19, June'2021. **Coordinator**
- FDP on 'E-Content Development for 21st Century Learners', organized by National NITTTR Chennai India, June 15-19, 2020.
- FDP on 'Mastering Virtual Class Delivery', organized by Classle in association with Association for Computing Machinery (ACM) Chennai,India, May 28 and 30, 2020.
- FDP on 'Managing Big Data', organized for Himachal Pradesh Technical University, Hamirpur, India, Dec 23 - 28, 2020 (**Coordinator**).
- FDP on 'Implementation of New Curriculum and Practicum', organized by Indian Instiute of Information Technology (IIT) Mandi, India, July 08-12, 2019.
- 'National Workshop on Emerging Trends in Information Technology in University Management', organized by Association of Indian Universities at HPU, Shimla India, April 23-27, 2012 (**Invitation received as resource person**).
- "National Workshop on e-Governance in Technical Education – National, state and Institutional Prospective", organized by NITTTR, Ministry of Human Resource Development, Govt. of India, Chandigarh, India, September 06, 2011.
- "National Mission on Education Through Information and Communication Technology (NMEICT)" hosted by Himachal Pradesh University, Shimla, India, September 26, 2009.

Academic Outreach/Social Contributions

- Second International Conference on Secure Cyber Computing and Communications (ICSCCC-2021) held during 21st-23rd May 2021 at CSE Department, Dr B R Ambedkar National Institute of Technology (NIT), Jalandhar, India. **Session Chair**

- ◫ Refresher Course in ICT (RC-325), organized by the UGC-Human Resource Development Centre, H.P. University, Shimla w.e.f. 01.02.2021 to 13.02.2021. **Resource Person**
- ◫ Expert Session 'Contact Tracing Via Arogya Setu App' in a webinar on Cyber Security, organized by Innovative Ideas InfoTech, on 11.03.2020. **Expert Session**
- ◫ CCTV Network Designing and Implementation at Mata Chintpurni, Una Himachal Pradesh Committee. Project Cost: 2.0 Cr. (approx.), **Technical Expert**
- ◫ ICT implementation at Govt. Degree College Bangana, Himachal Pradesh Committee. Project Cost: 50.0 lakhs (approx.), **Technical Expert**
- ◫ ICT implementation at Govt. Degree College Una Himachal Pradesh Committee, **Technical Expert**
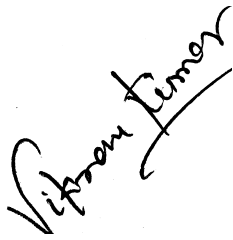
Research Publications

Journal Articles

[1] **V. Kumar** and R. Arablouei, 'Self-localization of resource-constrained IoT devices with imperfect measurements via approximate maximum-likelihood estimation,' *IEEE Internet of Things*, communicated, July'21.

[2] V. Kumar and R. Arablouei, 'Self-localization of IoT devices using noisy anchor positions and RSSI measurements,' *Wireless Personal Communications*, revision submitted, June'21.

[3] L. Chen, S. Fan, **V. Kumar** and Y. Jia, 'A method of human activity recognition in transitional period,' *Information*, vol. 11, no. 9, p. 416, 2020.

[4] **V. Kumar**, R. Arablouei, F. de Hoog, R. Jurdak, B. Kusy and N. W. Bergmann, 'Pseudo-linear localization using perturbed RSSI measurements and inaccurate anchor positions,' *Pervasive and Mobile Computing, Elsevier*, 2018. DOI: https://doi.org/10.1016/j.pmcj.2018.11.004.

[5] V. J. Singh, **V. Kumar** and K. L. Bansal, 'Research on application of perceived QoS guarantee through infrastructure specific traffic parameter optimization,' *International Journal of Computer Network and Information Security*, vol. 6, no. 3, p. 59, 2014. DOI: 10.5815/ijcnis.2014.03.08.

[6] **V. Kumar**, D. Sharma and V. Singh, 'Wi-Fi Performance and Efficiency over TCP: A Study of Himachal Pradesh University Campus Network, Shimla, India,' *International Journal of Computing and Business Research*, vol. 3, 2012.

[7] V. Sharma, **V. Kumar** and B. Thakur, 'Need of bandwidth management and formulation of policy framework for effective utilisation of internet services within a university campus,' *International Journal of Computer Science and Communication*, vol. 2, no. 1, pp. 173–178, 2011.

[8] V. Sharma, **V. Kumar** and B. Thakur, 'Analysis of technical and managerial issues involved in designing a conceptual framework for university campus-wide network system,' *International Journal of Computer Science and Communication*, vol. 1, no. 2, pp. 215–221, 2010.

[9] D. Sharma, **V. Kumar** and V. Singh, 'ICT in universities of the western himalayan region of india: Study of networks, performance and efficiency,' *International Journal of Computer Applications*, vol. 6, no. 10, pp. 10–15, 2010.

Conference Articles

[10] **V. Kumar** and R. Arablouei, 'Self-localization given single perturbed measurement of anchor positions and RSSI,' in *IEEE 23rd International Symposium on Wireless Personal Multimedia Communications (WPMC)*, accepted for publication, 2020.

[11] **V. Kumar**, R. Arablouei, R. Jurdak, B. Kusy and N. W. Bergmann, 'RSSI-based self-localization with perturbed anchor positions,' in *IEEE 28th Annual International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*, 2017, pp. 1–6. DOI: 10.1109/PIMRC.2017.8292600. [Online]. Available: http://www.scopus.com/inward/record.url?eid=2-s2.0-85045257433&partnerID=MN8TOARS.

[12] **V. Kumar**, R. Arablouei, R. Jurdak, B. Kusy and N. Bergmann, 'Multi-mode tracking of a group of mobile agents,' in *IEEE 20th International Symposium on Wireless Personal Multimedia Communications (WPMC)*, 2017, pp. 161–166. DOI: 10.1109/WPMC.2017.8301801. [Online]. Available: http://www.scopus.com/inward/record.url?eid=2-s2.0-85045875739&partnerID=MN8TOARS.

[13] **V. Kumar**, N. W. Bergmann, I. Ahmad, R. Jurdak and B. Kusy, 'Cluster-based position tracking of mobile sensors,' in *IEEE Conference on Wireless Sensors (ICWiSE)*, 2016, pp. 7–14. DOI: 10.1109/ICWISE.2016.8187754. [Online]. Available: http://www.scopus.com/inward/record.url?eid=2-s2.0-85045276263&partnerID=MN8TOARS.

[14] V. J. Singh, M. Bhushan, **V. Kumar** and K. L. Bansal, 'Optimization of segment size assuring application perceived QoS in healthcare,' in *Proceedings of the World Congress on Engineering*, vol. 1, 2015. [Online]. Available: http://www.scopus.com/inward/record.url?eid=2-s2.0-84991264441&partnerID=MN8TOARS.

[15] V. J. Singh and **V. Kumar**, 'Segment size optimization ensuring application perceived qos in healthcare,' in *IEEE Fourth International Conference on Advanced Computing Communication Technologies*, vol. 1, 2014, pp. 488–492. [Online]. Available: https://dl.acm.org/doi/abs/10.5555/2605698.2605803.

[16] D. Sharma, **V. Kumar**, M. Zennaro and V. Singh, 'A Study of Efficiency-Campus Networks in Western Himalayan Universities of India,' in *IEEE International Conference on Advanced Information Networking and Applications (WAINA)*, 2011, pp. 751–756. DOI: 10.1109/WAINA.2011.100. [Online]. Available: http://www.scopus.com/inward/record.url?eid=2-s2.0-79957543746&partnerID=MN8TOARS.

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